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ABSTRACT

A study of ways in which users conduct subject searches with an online public access catalog (OPAC) was performed at the College Park Campus of the University of Maryland. Both process (search patterns) and product (search results) variables were examined with respect to individual characteristics of 39 volunteers, many of whom were master's level (64%) library science (62%) students. The OPAC used is menu-driven, and provides access through author, title, combined author/title, subject (LC subject headings), keyword, and number; boolean searching was not fully implemented at the time of the study. Each subject was asked to complete two search tasks, one straightforward and easy to complete, and the other open-ended and more difficult. They were then asked to list the call numbers of relevant items and to fill out a questionnaire designed to ascertain user satisfaction and demographic information. Results were considered for three criterion measures: user satisfaction, number of hits, and relevancy score. It was found that (1) the subjects used the OPAC with relative ease and the degree of success and satisfaction obtained was relatively high; (2) most subjects preferred subject heading to keyword searching, and (3) there was no evidence of strong relationships between search type or search results and individual characteristics. (BBM)

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SEARCHING THE ONLINE PUBLIC ACCESS CATALOG

Final Report
June 30, 1985

Sponsored by: Council on Library Resources
CLR 791-I

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Searching the Online Public Access Catalog

Online public access catalogs (OPAC) offer opportunities and challenges for both librarians and patrons. An OPAC offers patrons the potential for a multitude of access points to the collection and the problems dealing with complex, interactive systems. OPACs increase bibliographic control and relieve librarians from the burdens of catalog card production and filing, but introduce requirements for managing the interactions of people and complex systems. Increased flexibility inevitably brings increased complexity for all concerned. One thing is certain; OPACs are being developed and installed in increasing numbers in libraries of all types.

Much has been written about the technical aspects of OPAC development, some evaluative studies have been done, and proponents and opponents have argued their cases. That patrons and librarians have distinct views of the catalog in general is not a new idea and calls for broader access for patrons have been made (Rocke & Ross, 1985). Not until the Council on Library Resources sponsored a massive Online Catalog Project, however, were users and systems studied carefully. Five agencies (J. Matthews and Associates, Library of Congress, OCLC, Research Libraries Group, and University of California) conducted studies of thirty-one OPACs under the auspices of the Council. Each agency used a common questionnaire but developed individual research hypotheses and methods.

One aspect of the OCLC project explored user search patterns via transaction log analysis. Kaske and Sanders (1983) reported that "In all types of libraries, patrons are conducting more subject searches than most librarians generally believe they do (p.65)." Other OCLC results (Markey, 1983; Tolle, 1983) indicated that users ten to use the same search pattern throughout a session, e.g. they stick with an author search rather than change to a subject search; different users use a variety of search strategies successfully; that patrons in general are successful in locating documents, although subject searches are least successful; and that patrons have positive attitudes toward OPACs. Although much was learned through these explorations of OPACs, all project directors point out that much work remains to be done in developing both theoretical and practical understanding of the how humans and machines interact in libraries.

Purpose The purpose of this research was to explore the ways that users conduct subject searches with an online catalog. It was conducted to contribute to understanding of how people approach search tasks in a controlled environment, to give guidance to designers of OPACs, and to provide an experience base for the design and evaluation of OPAC training methods and materials. Both process (search patterns) and product (search results) variables were examined with respect to individual characteristics of subjects. User search patterns were also related to

the user/system interface. Since the research was exploratory, no a priori hypotheses about relationships were made.

METHOD

Variables The interaction of human beings with complex systems presents an array of possible variables, many of which are individually uncontrollable or interact in nonsummative ways. In presenting a conceptual framework for general online retrieval, Fidel & Soergel (1983) provided an outline of research variables for study which included: setting, user, request, database, search system, searcher, search process, and search outcome. For the case of an OPAC the user and searcher are one and the same as are database and search system. Lawrence & Matthews (1984) considered four major variables in their study of online catalogs: user, task, setting, and system interface.

The present study considered the user, the search process, the results, and some aspects of the user interface as major variables. Setting and the search task (request) were controlled by the researchers and thus treated as constants. Characteristics taken as dimensions of the user variable were: previous computer experience, previous OPAC experience, university status, major, sex, age, and native language. Analysis of individual searches led to a simple binary classification scheme for search strategy: homogeneous search (e.g. all subject heading

search types), and heterogeneous search (e.g. a subject heading search followed by a keyword search). Results were considered for three criterion measures: user satisfaction, number of hits, and relevancy score. The user interface was considered by examining frequencies of command use.

Subjects Volunteers were solicited from computer science, library science, education, and psychology classes. A total of 39 volunteers participated in the study. Table 1 summarizes subject characteristics. Overall, subjects were experienced computer users (74% used computers at least weekly). This was an considered to be an unusually high proportion of computer users (Kaske & Sanders (1983) reported that about 25% of the users in their study regularly used other computer systems) and was likely due to the type of classes from which the subjects were drawn. Over half (54%) had some previous OPAC experience. It was highly unlikely that this experience was with the OPAC in this study because at that time it was only available in the Law Library at the Baltimore campus. Although the intention of the research was to attract a large, representative sample of undergraduate and graduate students from a variety of disciplines, the actual number of volunteers was disappointingly low and the ranges of statuses and majors was skewed. Most of the subjects were Master's level (64%) Library Science (62%) students. The intention of the research design was to compare search patterns and results across majors. Since so few

Table 1

Subject Characteristics

Previous computer experience	
daily	14
weekly	15
monthly	4
quarterly	1
once a year	1
never	4
Any previous OPAC experience	
yes	20
no	17
University status	
freshman/sophomore	1
junior/senior	8
Master's	25
Doctoral	1
faculty	3
staff	1
Sex	
male	8
female	31
Major	
Library Science	24
other	15
Age	
20-25	14
26-30	8
31-35	6
36-40	4
41+	4
Language	
English	36
non-English	3

Note: some characteristic totals not 39 due to missing responses.

non-library science subjects were obtained (3 computer science, 4 education, 4 business, 4 miscellaneous), these were combined and considered as a non-library science group. The subjects were predominately female (80%) and over half (61%) of all subjects were aged 30 years or younger.

Setting The study was conducted at the University of Maryland College Park campus. The University of Maryland has five campuses which at the time of the study were in the third year of a seven year library automation project. At College Park, the collections are housed in a main library and six branches and serve approximately 35,000 students and over 10,000 faculty and staff. A Geac integrated library system was installed at the College Park campus in 1982 to serve the branches of all libraries on all five campuses. The circulation subsystem was in full operation at all campuses before the study began. The OPAC subsystem came online at the Law Library at the Baltimore campus in December of 1983. At the time of the study, the College Park holdings were being added to the database, and the subsystem was not yet available to the public. Approximately 1.2 million items (450,000 titles) were represented in the database at the time of the study.

System The OPAC used in this study is menu-driven and gives users access through author, title, combined author/title, subject (LC subject headings), keyword (keyword in author, title or subject heading), and number (call, government document, LC, ISN). Although boolean searching is part of the system design, it was not fully implemented during the time the study took place. The system first prompts the user for a search type, e.g. subject, author, etc. A search specification is then requested, e.g. for subject search a subject heading is requested and one example

given. During the search session three character command abbreviations or number choices (for titles or subject heading lists) are presented as options for the user. Users must type the three characters or press a function key to select an option. The various commands are: FOR (scroll forwards in a list), BAC (scroll backwards in a list), IND (return to a list of subject headings), CIT (return to a list of titles), FUL (see a full citation), BRF (see shelf location), CAT (begin a new search) and HLP (view a help screen).

Search Tasks Many studies of both traditional and online catalogs have demonstrated high user success for searching the catalog (Hafter, 1979). Subject searching, however, does cause some difficulty for users (Bates, 1977; Kaske & Sanders, 1983; Kinney, 1984). Since one of the greatest potentials for increased service to the patron offered by an OPAC is the provision of many subject access points, and as noted earlier, OPAC users conduct more subject searches than previous studies have shown, this study focused on subject searches. Several search scenarios were developed early in the project. OPAC searches were conducted by project staff for each, and two searches selected for use in the project (Appendix A). The first search task was designed to be straightforward and easy to complete. It required a simple topic (dog) to be related to a well-defined task (training). The second search task was designed to be open-ended and more

difficult to complete. It required two broad topics (children and television) to be related in a very general way (effects of).

Procedures Subjects were told they would have a chance to help library staff evaluate the OPAC which was due to become available on campus. They signed up for a half-hour block of time and were told to report to a room in the main campus library. A research assistant following a written protocol (Appendix B) presented them with a page describing two search scenarios and directed them to the terminal. Subjects were asked to list the call numbers of items they would actually seek in the stacks. No instruction for using the terminal or the system was given. Upon completing the search, or when 20 minutes were up, the research assistant gave the subject the questionnaire to complete. The twenty minute period was based on pilot tests of the searches by graduate assistants and the OCLC results (Tolle, 1983) which yielded an average search times 6.1 minutes at Syracuse University and a range of four to nine minutes per search at Ohio State University (both of which were similar settings to the one in this study). The data collection took place over an eight week period. Each week, a research assistant ran a program to dump the transaction log file for each subject.

Criterion Measures A questionnaire (Appendix C) designed to ascertain user satisfaction and demographic information was designed based upon the questionnaire used in the CLR Online

Catalog Project (Matthews & Lawrence, 1984). This instrument was tested with graduate assistants in the Library School and revised. Responses to five questions (1-5) were used to assign a user satisfaction rating to each user. The remainder of the questionnaire requested demographic data and comments. The second, and clearly the grossest measure of performance consisted of simple counts of "hits" for each search. Subjects selected relevant documents (hits) by listing the call numbers on the search task forms. The third criterion measure used was a relevancy score assigned by the researchers to each search task completed. Upon completion of the data collection, titles for all call numbers listed by subjects were retrieved from the database and listed. Four project staff members independently assigned relevancy ratings to each title using a five point scale (Saracevic, 1976 recommended a ratio scale having from two to ten points). These ratings were averaged, and a final relevancy score assigned to each title. Each subject's set of call numbers was matched with the relevancy scores for each call number they listed. A mean relevancy score for each of the two search tasks was thus found for each subject.

Questions Two general questions motivated the research. How are subject searches conducted using an OPAC? How successful are subject searches using an OPAC? Particular questions which guided the study related to the relationships between the major variables. Correlations were calculated using the SPSS program

to explore the following questions: Are results related to individual characteristics? Are search strategies related to individual characteristics? Are results related to how the searches were conducted?

RESULTS

Search patterns Complete transaction summaries were collected for 33 subjects. Transaction logs for six subjects were lost due to equipment problems. Since each transaction log file contained all system responses as well as the keystrokes entered, an abbreviated summary of each subject's session was prepared. Each keystroke action was termed a "move" for the purpose of this study. Each subject's session was divided into two parts, one each for the two search tasks. These records contained a sequence of search beginning types (e.g. subject, subject, keyword-title, etc.) and summaries of the total number of keystrokes for each of the following moves: forwards, backwards, see subject heading lists, see title lists, see full citations, see shelf locations, and helps. Total number of hits listed on the search forms came next, followed by the same summary for the second search. Table 2 summarizes the search moves for both search tasks.

Table 2

Summary of Search Moves

Move	Search Task 1 Mean	Search Task 1 Range	Search Task 2 Mean	Search Task 2 Range
Begin search	3.9	1-14	3.8	1-15
Forwards	5.6	0-22	8.6	0-50
Backwards	0.9	0-5	2.1	0-28
Subject list	1.8	0-8	2.2	0-8
Title list	2.0	0-11	1.7	0-11
Full citation	0.8	0-3	1.1	0-5
Location	0.5	0-3	0.5	0-3
Help	0.2	0-1	0.2	0-3

It was somewhat surprising that subjects in general did not use more begin search moves for search task two which was more open-ended than search task one. Perhaps the substantial number of subject headings and title lists for the topic provided enough information to satisfy the perceived task. Another reason may have been that half of the subjects were stopped after 20 minutes of searching and thus may not have completed their second search. Because there were so many subject headings and titles for the second search task, it is not surprising that subjects moved forward and backwards significantly more times in the second search. Uses of forwards and backwards displays may have served as important filtering aids for selecting relevant titles since the mean number of hits listed by subjects for the second search task was close to the mean for the first task which had many fewer possible titles and subject headings from which to select. Use of the subject listings and title listings features was not great for either search. For the second search there was a slight increase in the generally meager use of full citations.

This may have been due to a learning effect for the second search, but since other moves did not show a learning effect from first to second search, it was more likely due to subjects wanting to gather more information about a more difficult topic to weed a large collection of hits. That subjects would seldom check for shelf location is not surprising considering that they were searching for topics that they themselves did not identify. Subjects' neglect of the help feature could be interpreted as an indication of how easy the system was to use or an indication of a poor help facility. Since only eight subjects tried the help feature at any time, the former interpretation seems most plausible. Although very few subjects used the help facility, some subjects did make comments on the questionnaire about providing command summaries or subject heading lists available. See Markey (1984), for recommendations for online and offline assistance with OPACs. The high degree of success in using the OPAC in this project may have been due to the high degree of previous computer experience or previous other OPAC experience characteristic of this sample.

Because the OPAC used in the study gave users subject (LC subject heading) and keyword (author, title or subject heading) access points, subjects' preferences were of interest. Table 3 summarizes all search types for both search tasks.

Table 3

Summary of Begin Search Moves by Type of Search

Search Type	Search Task 1 N	Search Task 1 %	Search Task 2 N	Search Task 2 %
Subject heading	73	63%	80	80%
Keyword (total)	29	25%	16	16%
author	0	0%	0	0%
title	8	7%	2	2%
subject	21	18%	14	14%
Author	1	1%	0	0%
Title	9	8%	3	3%
Combined author/title	0	0%	1	1%
Number	3	3%	0	0%
Total	115		100	

Subject heading searches were most commonly used for both search tasks, but were used even more exclusively in the second task. This may have been due to the search topic itself or to a learning effect for the second task. Note that subjects were generally willing to use library assigned subject headings rather than their own keywords. It should be noted that the sample consisted of mostly library science majors (21 of 33=64%). The subjects who were non-library science majors generally used a variety of search types and were more likely to use keyword searches. The 12 (36%) non-library science majors used 48% of the keyword searches for the first search task and 88% of all keyword searches for the second search task. Generalizing from a small, non-randomized sample is not possible, but it is clear that both subject and keyword searches are used by patrons and comparative study across user catagories should be undertaken.

As in previous OPAC studies, great variability was shown in how subjects defined their searches. Note that subjects had no opportunity to plan a search before arriving at the terminal. It is likely that some subjects explored a new system rather than focused on execution of an optimal search. Searches which used a single search type for a task (e.g. all subject headings) were termed homogeneous searches. Searches employing different search types for a task were termed heterogeneous searches. Table 4 presents a summary of how many subjects exhibited homogeneous and heterogeneous search patterns.

Table 4

Summary of Search Pattern Types

Pattern Type	Search Task 1 N	Search Task 1 %	Search Task 2 N	Search Task 2 %
Homogeneous (total)	20	61%	24	73%
subject heading	17	52%	19	58%
keyword	3	9%	5	15%
other	0	0%	0	0%
Heterogeneous	13	39%	9	27%

Most subjects selected a search type (usually subject heading) and stayed with it for the search task. Some subjects used a single search type one time only, others used a single search type repeatedly, and still others used a multiplicity of search types. These results are in close agreement with the results reported in the OCLC studies. Tolle (1983) reported that overall, two-thirds of the users used a single search type.

To explore whether subjects were consistent in search patterns across search tasks, a simple comparison between search tasks one and two was made. Eleven of the 33 (33%) subjects changed their search approach for the second search task. Thus, two-thirds of the subjects were consistent in using a search pattern for both tasks. Since subjects were generally successful with the first search it is not surprising that they maintained the search approach even for a more difficult search.

Search success User Satisfaction: Results of the searches were generally successful. Scores were computed for user satisfaction by assigning a value (1=most satisfied,--4=least satisfied) to each of the four possible responses on the five questions on the questionnaire. The mean of the five values was used as a measure of user satisfaction. The overall mean was 1.6, a generally high level of satisfaction. The data were collapsed in this manner to provide an overall measure of satisfaction. Almost all subjects made comments, and many provided insight into some of the problems subjects encountered. Several tried to use Boolean connectives based upon experience with other systems and this led to error messages and misleading displays. These frustrations were expressed in comments and the satisfaction scores in a few cases.

Number of Hits: Subjects were asked to copy the call numbers of titles which they would actually try to find in the stacks.

Since subjects were volunteers in an experiment rather than patrons motivated by personal needs, interpretations of success based on "what if" relevancy were made cautiously and informally. For the first search task the mean number of hits was 5.3 and the number of hits identified ranged from one to twelve. For a simple search task with relatively few titles in the database, this seemed reasonable. For search task two the mean number of hits was 5.9. As expected, the range of hits cited was much greater, ranging from zero to thirty-four. The subject who identified no hits made thirteen attempts to link subject headings with boolean operators, yielding repeated error messages from the system and no titles. Perhaps subjects were reflecting actual users' habit of using the catalog to find a relevant shelf section and then browsing the shelves.

Relevancy score: The mean relevancy score for search task one was 4.1 based on a 1 to 5 scale with 1 representing not relevant and 5 representing highly relevant. Scores ranged from 1.3 to 5.0. For the second search task the mean score was 3.8 with a range from 1.0 to 4.9. The fact than no subject scored a perfect 5 for the second task reflects the relative open-endedness of the second search task. In general, subjects found items that were judged by the research team to be quite relevant for both search tasks. Overall, the OPAC provides a viable method for locating useful documents in the library.

Results and search patterns No strong relationships between results and search pattern were found. Although it seems plausible that use of multiple search types will yield more hits or more relevant hits, or even more satisfaction with the overall search, no such results were found. Table 5 presents Spearman correlation coefficients for the three result measures by the two search pattern types. Note that Spearman coefficients were used here and in all cases where one or both of the variables were not measured on interval scales.

Table 5

Correlation Coefficients for Results by Search Pattern Type

	Search Pattern Type			
	Search Task 1		Search Task 2	
Criterion Measure	R	p	R	p
Satisfaction	.179	.161	.179	.161
Hits	-.039	.416	-.045	.403
Relevancy score	-.028	.439	-.004	.492

Note: Satisfaction was measured for the entire session rather than each search task.

Subjects were generally successful in locating items using the catalog and satisfied with using it regardless of the search approach taken.

Individual characteristics and search patterns To explore possible relationships between individual characteristics and search patterns, correlations were calculated. Table 6 presents

Spearman coefficients and probability levels for the two search pattern types by characteristic.

Table 6

Correlation Coefficients
for Individual Characteristics by Search Pattern Type

	Pattern Type			
	Search Task 1		Search Task 2	
Characteristic	R	p	R	p
Previous computer experience	.056	.379	-.130	.236
Previous OPAC experience	.017	.464	-.091	.314
University status	-.402	.010	-.256	.075
Sex	-.123	.248	-.130	.236
Major	.422	.007	.103	.284
Age	-.236	.101	-.087	.321
Language	.177	.163	.043	.406

A somewhat strong relationship was found between university status and search pattern type. In general, the larger the status number (increasing level of study/work), the lower the search pattern type (homogeneous type). In general, the more university experience, the more likely a subject was to use a direct, single search pattern. Although this relationship was found for both search tasks, the findings are tempered by the skewed distribution of statuses, where two-thirds (22 of 33) of the subjects were Master's level. The strong relationship between major and search pattern type for search task one carried over only weakly for search task two. Together with the tendency of non-library science majors to use a variety of search types, this finding provides a basis for further study of academic course of study and OPAC use. In general however, strong,

consistent relationships between search pattern types and individual characteristics were not found.

Individual characteristics and search results Relationships between individual characteristics and search results were also studied via correlational analyses. Table 7 presents Spearman coefficients for individual characteristics by user satisfaction.

Table 7

Correlation Coefficients
for Individual Characteristics by User Satisfaction

Characteristic	Satisfaction R	p
Previous computer experience	.035	.416
Previous OPAC experience	-.129	.224
University status	.150	.180
Sex	-.014	.466
Major	-.168	.153
Age	.119	.245
Language	.052	.377

No strong relationships were found between any individual characteristics and user satisfaction. The generally high overall satisfaction indicated that most users were satisfied with the OPAC no matter what their personal characteristics.

Similar results were found for relationships between individual characteristics and number of hits. These results are summarized in Table 8 below.

Table 8

Correlation Coefficients
for Individual Characteristics by Hits

Characteristic	Task 1 Hits R	Task 1 Hits p	Task 2 Hits R	Task 2 Hits p
Previous computer experience	-.053	.376	-.181	.139
Previous OPAC experience	-.170	.160	-.022	.450
University status	.131	.216	.220	.092
Sex	-.288	.040	.042	.402
Major	-.010	.476	-.129	.221
Age	.088	.307	-.195	.131
Language	.000	.500	-.166	.160

Although no strong, consistent relationships were found, it is interesting to note the consistent trends in previous experience with computers and other OPACs. The consistently negative correlations across both tasks indicate that lower experience scores, i.e. more actual experience since daily use has the lowest value (1) for computer use, and yes to previous OPAC experience (1) relate with high numbers of hits; subjects with more computer experience or OPAC experience tended to locate more hits. This trend, however, was not found when relevancy scores were considered. Table 9 presents Spearman coefficients for individual characteristics by relevancy score. No strong, consistent relationships between relevancy score and individual characteristics were found.

Table 9

Correlation Coefficients
for Individual Characteristics by Relevancy Scores

Characteristic	Task 1 Score R	Task 1 Score p	Task 2 Score R	Task 2 Score p
Previous computer experience	.100	.275	-.429	.003
Previous OPAC experience	-.097	.287	.072	.342
University status	.126	.226	.034	.423
Sex	.154	.178	.171	.159
Major	-.017	.459	-.250	.070
Age	.124	.239	-.109	.269
Language	-.221	.091	-.005	.489

DISCUSSION AND SUMMARY

Perhaps the major finding of this research was the relative ease with which subjects used the OPAC and relative high degree of success and satisfaction obtained. In general, subjects preferred subject heading searches rather than keyword searches, but used a variety of approaches nonetheless. Subjects used the commands for specifying a search type and moving forwards in a list most often, and seemed to ignore the help feature. Neither of the major independent variables, search pattern type or search results were related to any of the individual characteristics at statistically significant levels. Major field of study and university status were weakly related to search pattern type, and previous computer and OPAC experience were weakly related to number of hits. These relationships bear further study with a randomly selected, comprehensive sample. It is recommended that future studies which control the search task variable should

pay subjects for participation. This should insure at least a larger sample, although not a random one. The fact that most subjects were library science students with intrinsic interest in OPACs, together with the fact that the OPAC was not yet in operation (novelty effect) likely caused them to focus on the tool rather than the tasks at hand. The long search times for subjects in this project may have been due to their willingness to explore the system, thus affecting the resulting search patterns.

Based on subjects' comments, it is recommended that command summaries and simple system overviews be posted near terminals. Although some subjects suggested immediate access to subject headings or thesauri in print or online form, whether these are cost effective remains an issue. A few subjects recommend making print versions of hits available. For this sample, training in the use of the system was not necessary or requested. Further exploration of users training requirements using a more representative sample is recommended. Overall, the results of this project suggest that this OPAC will be well received and used in a fashion consistent with previously studied systems.

REFERENCES

Bates, M. Factors affecting subject catalog search success. Journal of the American Society for Information Science. May, 1983, p. 161-69.

Fidel, R & Soergel, D. Factors affecting online bibliographic retrieval: a conceptual framework for research. Journal of the American Society for Information Science. 34(3) May, 1983, p. 163-80.

Hafter, R. The performance of card catalogs: a review of research. Library Research. 1979, p. 199-222.

Kaske, N. & Sanders, N. A Comprehensive Study of Online Public Access Catalogs: An Overview and Application of Findings. Volume 3, Final Report to the Council on Library Resources. Dublin, OH:OCLC, 1983.

Kinney, K. Online catalogs: a public services point of view. Library Hi Tech News. 1(7), July-Aug, 1984, p. 1-11.

Lawrence, G. & Matthews, J. Detailed Data Analysis of the CLR Online Catalog Project. Final report to Council on Library Resources, 1984.

Markey, K. Offline and online user assistance for online catalog searchers. Online. May, 1984, p. 54-66.

Matthews, J. & Lawrence, G. Further analysis of the CLR online catalog project. Information Technology and Libraries. 3(4) December, 1984, p.354-76.

Rocke, H. & Ross, J. Online catalogs for and by librarians. Technical Services Quarterly. 2(3/4) Spring/Summer, 1985, p. 1-10.

Saracevic, T. Relevance: a review of the literature and a framework for thinking on the notion in information science. In M. Voight & M. Harris (Eds) Advances in Librarianship vol 6 . NY:Academic Press, 1976.

Tolle, J. Current Utilization of Online Catalogs: Transaction Log Analysis. Volume 1, Final Report to the Council on Library Resources, Dublin, OH:OCLC, 1983.

Appendix A

Search Tasks

ONLINE CATALOG SUBJECT SEARCHES

Conduct a search of the Online Catalog to locate books which will help you acquire information relevant to the following topics. In the space below each topic write the call numbers of the tiltles you would take the time to find on the shelves.

Search 1. You have just gotten a dog. You are interested in finding out how to train your new pet.

Search 2. You are writing a paper related to the social impact of television on children. You need background information on this topic.

Appendix B

Protocols

1. Tell subjects: We are exploring the online catalog which will become available to the College Park campus in the near future. By conducting two sample searches for us, and giving us feedback on this activity you will assist us in evaluating the system, and preparing for its general introduction.

Here are the subjects for which you are to locate books. Give the subject the searches and a pencil.

You will be searching the computerized card catalog with this terminal. To signal the computer that you are done typing a command, press the SEND key. (point to the send key) I will be unable to answer questions once you begin. As you locate books that you would take the time to find on the shelves, please jot down the call numbers under the topic on the paper. When you have completed the searches, I will give you a short questionnaire to complete.

Be sure that the system is ready, the main menu should be on the screen. Press CAI and send to get the user started. Note the time the session is starting on the coding sheet.

If the subject does not complete the searches in 20 minutes, ask them to stop and complete the questionnaire anyway.

Collect the search sheet from the subject.

Note the time the subject completed the searches by moving back to the main menu (issue the TOP command). Give the subject the questionnaire, saying:
Please complete this questionnaire. Do not put your name or any identifying marks on it.

While the subject is completing the questionnaire, check the appropriate responses for your impressions of the subject on the coding sheet.

Collect the questionnaire and pencil. Give the subject a brochure describing the system. Say: Thank you for participating in this study. Here is a brief description of the system to be implemented.

Staple the coding sheet for the subject, the questionnaire, and the search form together, and prepare for the next subject.

CODING SHEET

Date:_____
Starting Time:_____
Ending Time:_____

Did the subject finish both searches?_____

Your impression of the subject's:

	extremely high	high	average	low	extremely low
Level of Interest	1	2	3	4	5
Level of Patience	1	2	3	4	5
Level of Seriousness	1	2	3	4	5

Comments:

Appendix C

Subject Questionnaire

ONLINE CATALOG QUESTIONNAIRE

We are exploring the online catalog which will become available to the College Park Campus in the near future. Please help us by completing the following questions. Your responses are confidential, please do not put your name anywhere on the questionnaire. Circle the letter of you response(s). Thank you.

1. In this computer search I found (mark one only):
   a. more than I was looking for
   b. all that I was looking for
   c. some of what I was looking for
   d. nothing I was looking for

2. In relation to what I was looking for, this search was (mark one only):
   a. very satisfactory
   b. somewhat satisfactory
   c. somewhat unsatisfactory
   d. very unsatisfactory

3. In terms of ease of use, the online catalog is (mark one only):
   a. very easy to use
   b. somewhat easy to use
   c. somewhat difficult to use
   d. very difficult to use

4. My overall attitude toward the online catalog is (mark one only):
   a. very favorable
   b. somewaht favorable
   c. somewhat unfavorable
   d. very unfavorable

5. Compared to the card catalog in this library, the online catalor is (mark one only):
   a. better
   b. about the same
   c. worse
   d. can't decide

6. Which search types did you like (mark all that apply)?
   a. subject heading
   b. subject keyword
   c. title keyword
   d. title
   e. author
   f. other

7. I use some type(s) of computer(s):
   a. daily
   b. weekly
   c. monthly
   d. about four times a year
   e. about once a year
   f. never

8. Have you ever used any other online catalog?
   a. yes
   b. no

9. My present affiliation with this university is:
   a. freshman/sophomore
   b. junior/senior
   c. graduate- Masters level
   d. graduate- doctoral level
   e. faculty
   f. staff
   g. other

10. I am:
   a. male
   b. female

SHORT ANSWER. Please write your response below each question.

11. My major or area of study is:

12. How old are you?

13. Is English your native language?

14. Was there anything confusing about the online catalog? What?

17. Do you have questions, comments or suggestions about using the online catalog?

THANK YOU FOR YOUR COOPERATION